Reporting the weather across the UK

Description

December 2015 was the wettest calendar month for the UK in a series of monthly weather records stretching back to 1910. But why does the Met Office state 1910 when listing records, especially when some records existed well before that time?

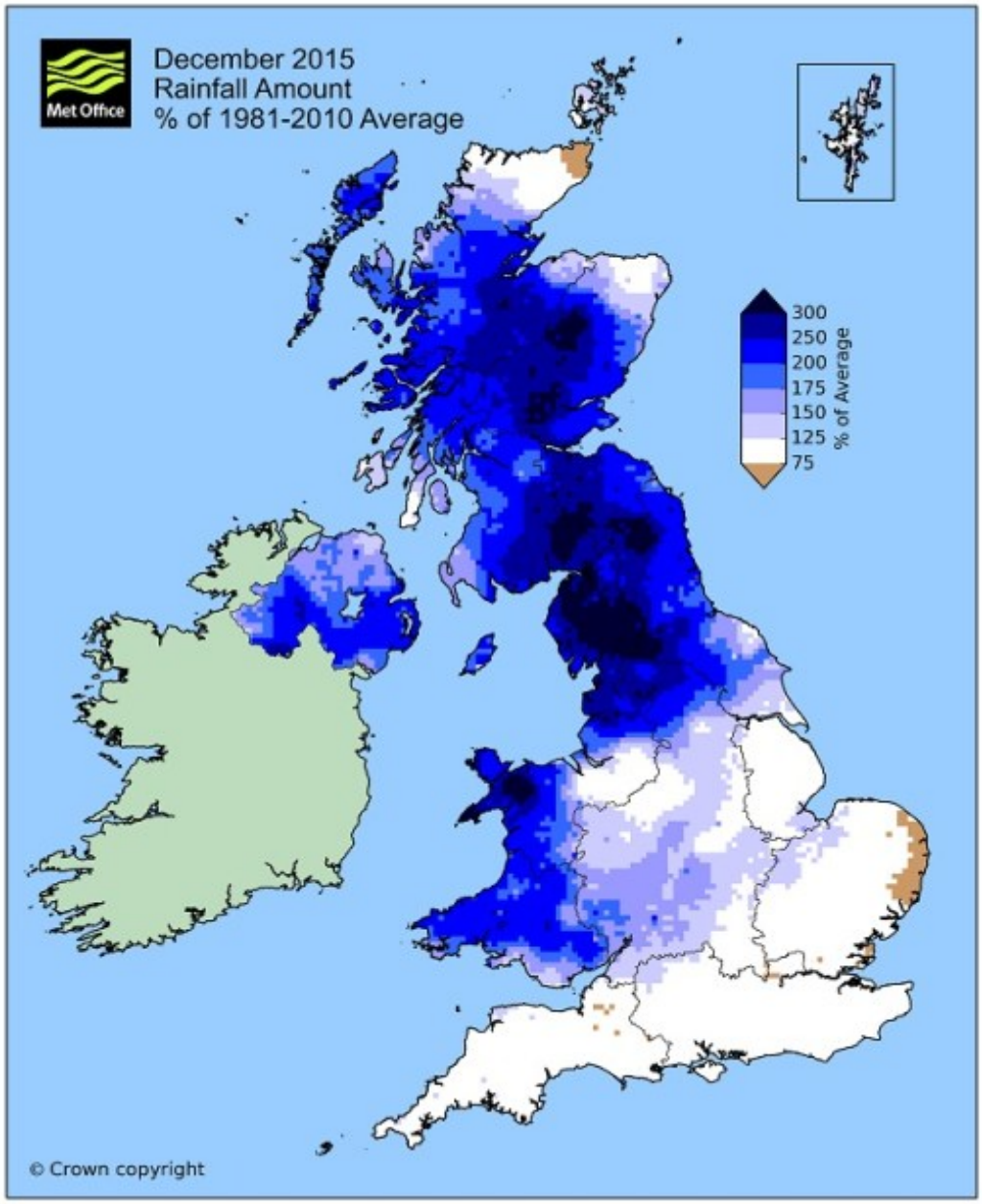
Part of the answer is that the Met Office has a responsibility to collate weather records for the entire UK, the UK countries and historic counties. The digital archive used to generate our UK analyses includes station observations back to 1853, but only since 1910 has there been a sufficiently dense network of stations to allow an analysis of the whole UK.

One station, the Oxford Radcliffe Observatory, which is managed by Oxford University School of Geography and the Environment – holds rainfall records back to 1767. This allows a greater understanding of the rainfall in Oxfordshire, but doesn't allow greater comparison with England or the UK: vital when you are trying to provide a complete picture.

The England and Wales Precipitation (EWP) series stretches back to 1766. In recent times the EWP – a highly significant climate series – is based on records from around 100 stations, but the further you go back the fewer recording stations there were. This provides a good analysis of records for England and Wales, but doesn't capture the remainder of the UK: Scotland and Northern Ireland. Additionally, it doesn't take account of the thousands of recording stations which provide more detailed picture for the UK in more modern times.

Dr Mark McCarthy is the head of the Met Office's National Climate Information Centre. Commenting on the results he said: "Although our UK dataset currently only stretches back to 1910 we are adding to it by digitising more of our extensive paper archives in order to extend these records further back in time. When we have done that it is possible that months like October 1903 may rival or even surpass some of the UK records set in December 2015.

"However for December 2015 we have a good picture of the rainfall patterns across the UK such as the record breaking rainfall in: Cumbria, North Wales; eastern Dumfries and Galloway; and parts of the Cairngorms."



December 2015 rainfall anomaly map

“In fact, as our very high-resolution rainfall map in December 2015 shows, parts of England were close to average and some places actually recorded lower than average precipitation. Just like a digital photograph, greater resolution allows you to observe finer detail. Therefore picking any one place or region may not be representative of the UK as a whole.”

Met Office national records are created using a method to interpolate observations from our network of stations onto a 5km by 5km grid covering the UK. The gridding method is a more sophisticated approach for analysing rainfall than simply taking an average of station data. However, because it also requires a denser network of stations it is not as long running a series as the EWP and some long running observing sites. The different datasets are therefore complementary and we use both to monitor our changing climate.

So, the UK's national climate series – the records you will see quoted when the Met Office routinely releases statistics – is a comprehensive rainfall analysis covering the whole of the UK back to 1910 using all available observations. Other series including the EWP are also a vital part of our national climate monitoring and provide us with an even longer historical context for some parts of the UK.

Professor Adam Scaife is a climate scientist with the Met Office's Hadley Centre. He said: "It's clear that December 2015 was a very significant month for rainfall and was the highest since our records began in 1910. We have been asked about the link between climate change and the rainfall in December 2015.

"With or without climate change there have always been exceptional spells of weather and there always will be. But climate change can add to the natural variations in our climate and it is this that increases the chance of record breaking weather and unprecedented extremes. It is therefore vital that we monitor our weather and climate in as much detail as possible to assess and predict future weather extremes."

Date Created
January 2016

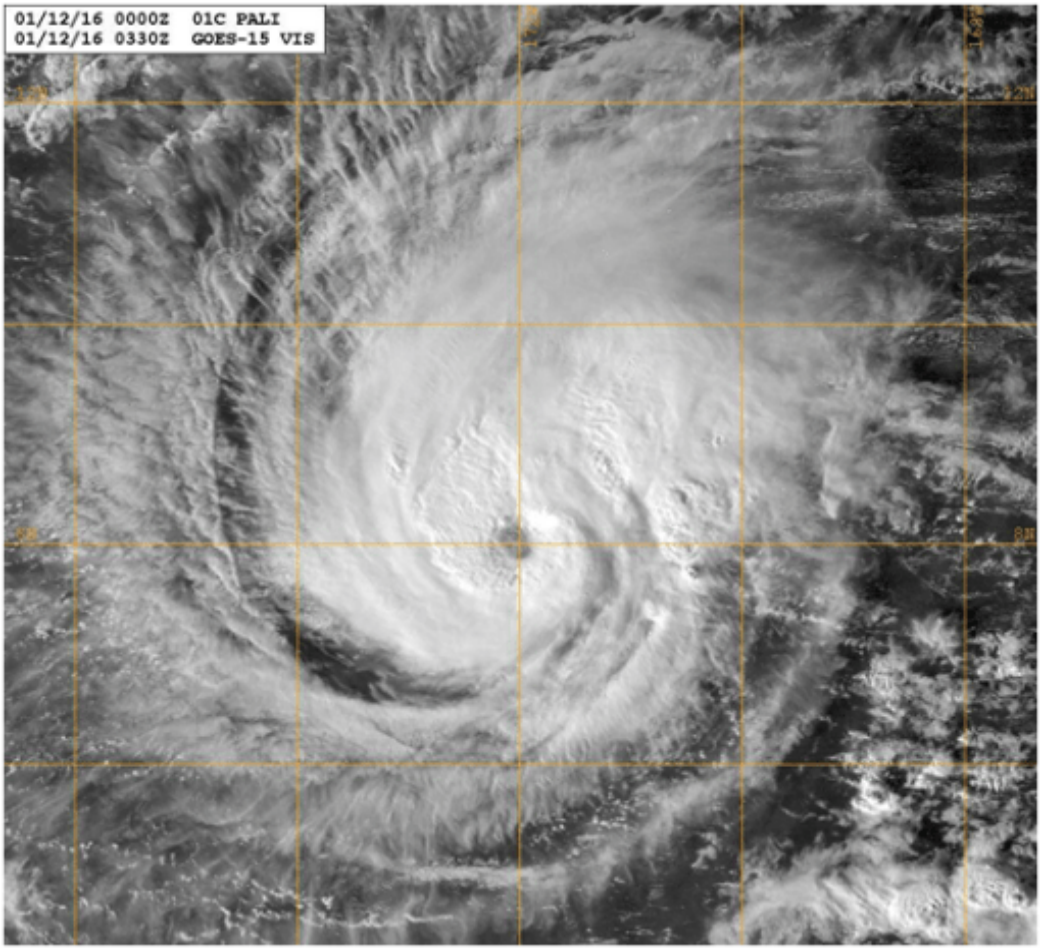
Pali becomes an unusual January North Pacific Hurricane

Description

The tropical cyclone season in the North Pacific in 2015 was extremely active, primarily due to the ongoing strong El Niño. Numerous records were broken across the region and in the central North Pacific (an area bounded by the 140°W and 180°W lines of longitude) it was the most active season on record by all measures.

By December, tropical cyclone activity in the northern hemisphere usually comes to an end, but on New Year’s Eve an unusual tropical depression formed in the central North Pacific very close to the equator. The depression dissipated early in January, but was a precursor of what was to come a week later. Tropical Storm Pali formed in the far southwestern corner of the central North Pacific region at a location closer to the equator than any other storm on record in the western hemisphere (east of the International Dateline).

Pali has fluctuated in strength in the last few days as it has drifted northwards, but a recent burst of intensification has resulted in it becoming the earliest central North Pacific hurricane to form in a calendar year on record. Pali beats the previous record set by Hurricane Ekeka in late January 1992.



Hurricane Pali at 0330 UTC on 12 January 2016
Image courtesy of the US Naval Research Laboratory

Although Hurricane Pali is no threat to any major land masses it will be watched closely in the next few days due to an unusual track being forecast by several computer models. It is currently predicted to sink southwards towards the equator and some models even suggest it could reach or even cross the equator as a tropical storm.

Conventional understanding of the science behind storm formation tells us that cyclones rarely form close to the equator since the Coriolis Effect, which induces rotation, is so small. In recent history there have been a couple of notable storm formations close to the equator. In 2001 Tropical Storm Vamei developed at latitude 1.5°N close to Singapore and in 2004 Tropical Storm Agni was briefly observed to cross the equator into the southern hemisphere as a weak depression before developing into a tropical storm at latitude 0.7°N in the Indian Ocean. However, there is no observed precedent of a full blown hurricane such as Pali moving close to the equator. Thus Pali should provide a useful insight into the behaviour cyclones in what is usually a cyclone-free zone.

Official warnings for the tropical cyclones in the central North Pacific are produced by the Central Pacific Hurricane Center. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Date Created

January 2016

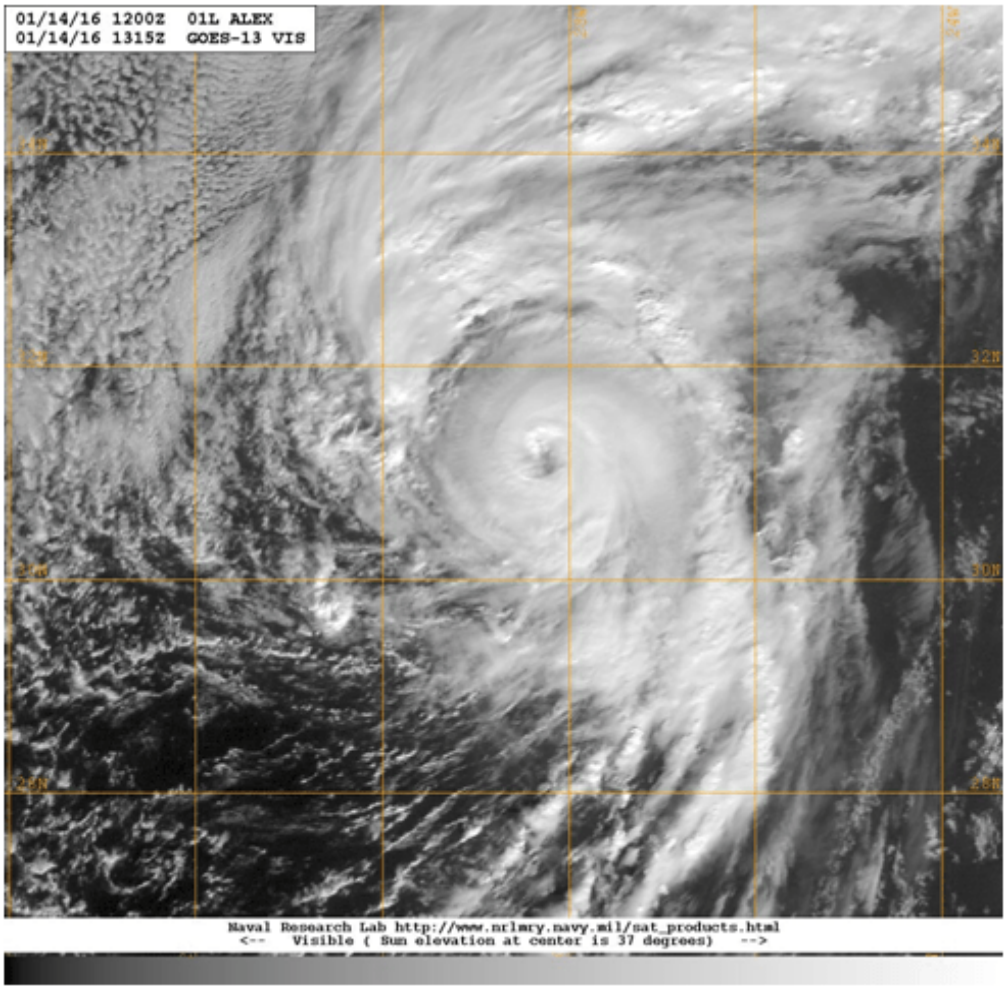
Another unusual January hurricane forms

Description

Just two days ago we reported how Pali had become a very unusual out-of-season hurricane in the North Pacific. This afternoon another unusual hurricane has formed – this time in the North Atlantic. The hurricane season for both these regions usually runs from about June to November.

Earlier in the week a non-tropical area of low pressure developed near Bermuda. This was a depression primarily driven by the clash of cold air from the north and warm air from the south, similar to the kind of depressions we experience in the UK. Strong winds were recorded on Bermuda as the depression tracked to the east. Then in the last two days the depression has started to develop a concentrated area of storm clouds near its centre to the extent that the National Hurricane Center declared it to be 'Subtropical Storm Alex'. Being 'subtropical' is a hybrid state for storms which exhibit some, but not all the characteristics of a fully tropical storm. Alex became the first subtropical storm to develop in the North Atlantic in January since 1978.

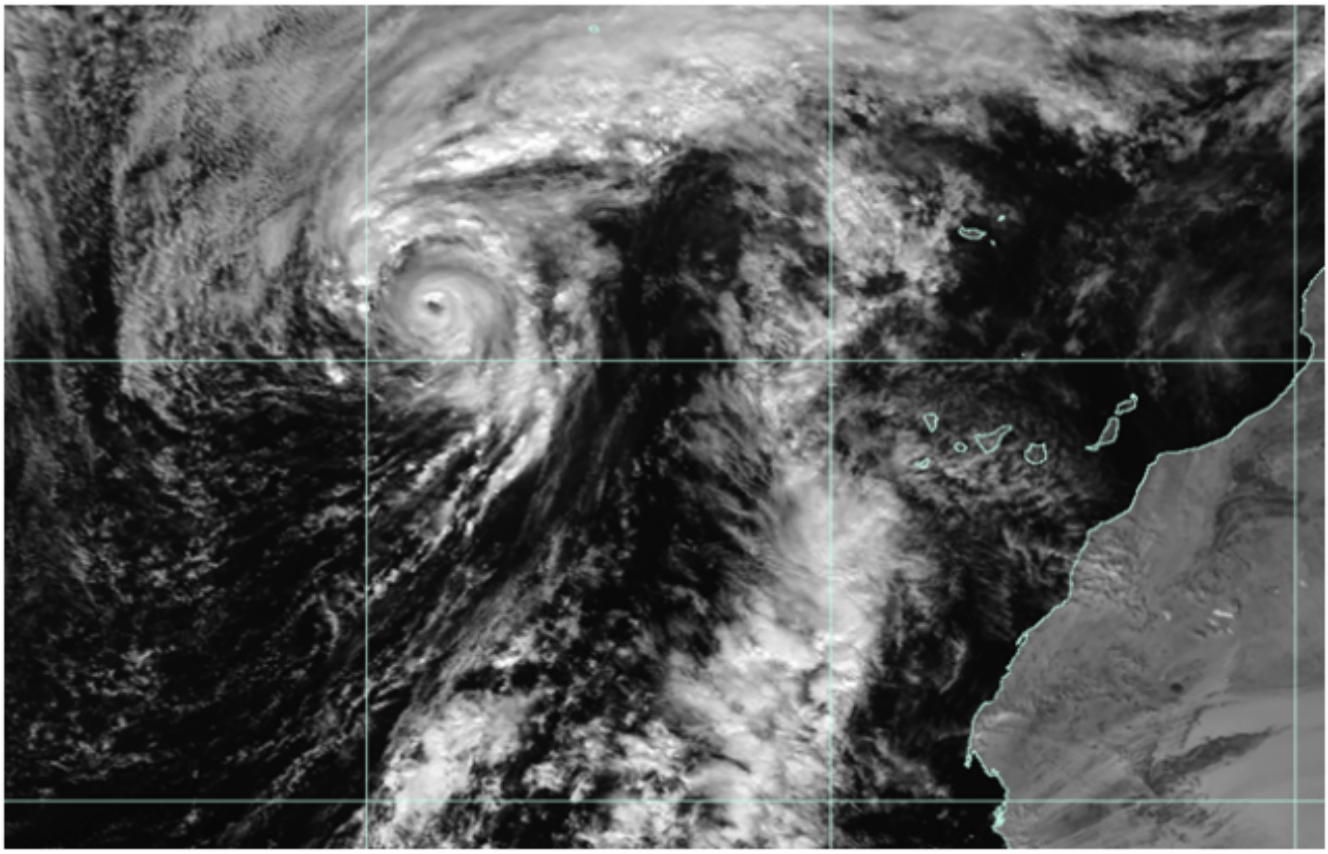
In the last day Alex has continued to develop a strong central mass of storm clouds rotating around a small eye and the National Hurricane Center has now designated it as a full blown hurricane. Alex is the first North Atlantic hurricane to exist in the month of January since Alice in 1955 and the first to actually form in the month of January since 1938.



Hurricane Alex at 1315 UTC on 14 January 2016 Image courtesy of the US Naval Research Laboratory

Alex is currently situated about 1000 km to the west of the Canary Islands. It is expected to move northwards bringing stormy conditions to the Azores where hurricane warnings have been issued. Winds over 75 mph and 100 mm rain or more is possible. An area of high pressure is expected to develop over the UK this weekend which should keep Alex over the ocean and away from our shores. Alex is eventually expected to be absorbed into a larger depression in the Atlantic near the southern tip of Greenland on Sunday.

Official warnings for the tropical cyclones in the North Atlantic are produced by the US National Hurricane Center. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.



Hurricane Alex at 1330 UTC on 14 January 2016

Date Created
January 2016

World weather roundup

Description

In this blog we take a look at what's happening around the world where the weather is straying away from what's normal or has the potential to bring disruption.

North America
A deep area of low pressure will bring the threat of severe weather across the Gulf States of Louisiana, Mississippi, Alabama and Georgia with heavy rain and severe thunderstorms combined with gale force winds. This rain may lead to more flooding in the lower Mississippi River basin.

Further north and east this system a 'nor'easter' will bring a risk of disruptive snow combined with gale force winds. Areas from Washington and Philadelphia up to New York are most at risk, and the US National Weather Service have issued blizzard watches for the risk of 8-12 inches of snow. There is also a risk of coastal flooding with the strong winds leading to rough seas too. Impacts on travel in the area could be significant.

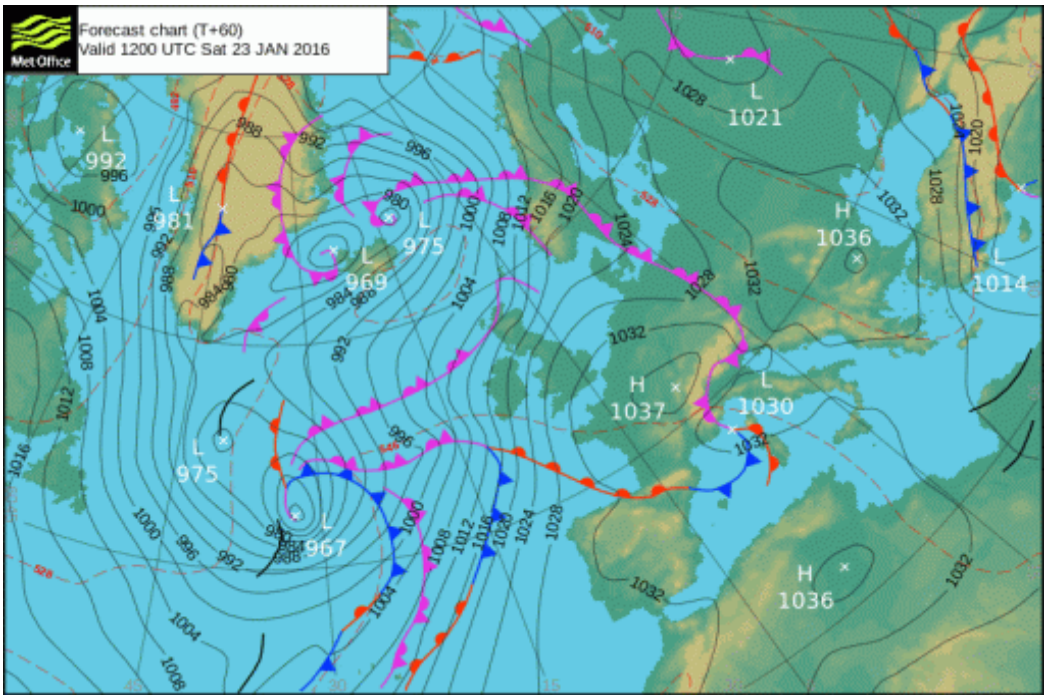
Asia
Across eastern and southeast Asia a large surge of cold air will spread across China and Taiwan with further heavy falls of snow anticipated across Japan. Parts of China and Taiwan will experience temperatures some 15 degrees below the average for January, with Taipei seeing highs of 6C instead of the low 20s Celsius. Some snow is also likely here over fairly modest hills.

Further south the unseasonal weather will bring a spell of heavy rain across northern Thailand, Laos and Vietnam, bringing a risk of flooding.

Australasia
In the South Pacific Ocean, Tropical Storm Victor lies to the east of Tonga and is expected to pass just to the south of the islands on Friday, bringing a period of gale force winds, heavy rain and thunderstorms and a risk of coastal flooding. The weakening storm is then expected to head towards New Zealand over the weekend.

Official warnings for the latest tropical cyclones in the South Pacific are produced by the Fiji Meteorological Service. The Met Office routinely supplies predictions of cyclone tracks from its global forecast model to regional meteorological centres worldwide, which are used along with guidance from other models in the production of forecasts and guidance. We also provide updates on current tropical storms via @metofficestorms on Twitter.

Europe
A large blocking area of high pressure over central and southeastern parts of Europe, which until recently also brought cold weather to the UK, will persist across these areas into the weekend.



Forecast pressure chart for midday Saturday 23 January 2016

Across Scandinavia, the Baltic States, Poland and Western Russia very cold conditions will be maintained with temperatures around 5-10C below average, but with dry weather expected.

Much of southeast Europe will also continue to feel the effects of this cold air with temperatures across inland areas well below average by day and some areas struggling to rise above freezing. Overnight minimums widely in negative double figures will compound the cold. Snowfall is also likely to lead to some disruption over Romania and then parts of Turkey, Serbia and Croatia over the coming days as weather fronts affect these areas. Next week should see a return to conditions more typical for the time of year as milder air arrives from the south and west.

Further north, the cold, still conditions are the perfect recipe for fog and freezing fog with parts of France, Belgium, the Netherlands and Germany being affected by this during Thursday and Friday before milder air arrives over the weekend.

Date Created
January 2016

Snowstorm to affect Northeastern and Mid-Atlantic US states

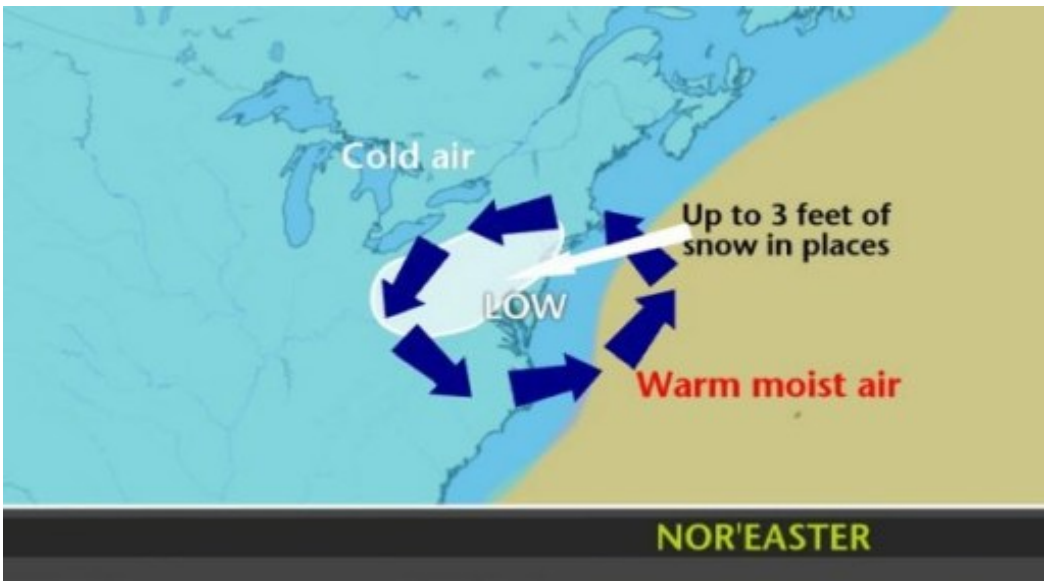
Description

A potentially record-breaking ‘nor’easter’ snow storm is expected to move towards Washington D.C. and Mid-Atlantic States in the next few days. This is the first big storm of the winter and will be accompanied by very strong and chilling winds, more especially on the northern flank of the storm, leading to blizzard conditions and significant associated impacts. Road and air travel in and out of the region will be affected, along with likely disruption to power supplies.

Currently the weather system is developing over Northern Alabama and Tennessee. The storm is expected to intensify on Friday night and during Saturday as it moves towards the Atlantic coastline of North Carolina, before moving away from the eastern seaboard overnight into Sunday.

Snow and ice have already affected parts of the northern Mississippi Valley. This is forecast to extend northeastwards on Friday, initially towards Ohio, then onwards to the Mid Atlantic States and southern New England overnight and during Saturday.

Very warm and humid air originating from the Gulf of Mexico will be drawn north with the storm and interact with the very cold air across the central northern states and southeastern Canada. On the boundary between the warm and cold air is where the most significant snowfall is likely.



Eastern US states to be affected by snow this weekend

Very strong winds are also expected with gusts of 50 to 60mph possible on the northern flank of the storm, affecting areas such as Manhattan, Washington and Baltimore.

A ‘State of Emergency’ has been declared across the Mid-Atlantic States region in readiness for the 30 to 90cm of snow expected. The heaviest snowfall is predicted just to the west of Washington DC and blizzard warnings have been issued by the National Weather Service.

There is the potential for greater snow amounts if the track and the intensity of the storm deviates from its current forecast. Also the strong wind may lead some drifting and enhance the impact of the snow.

Trans-Atlantic flights in and out of the snow and blizzard hit airports will be affected for a time. Schools across the region closed on Friday and Washington DC’s transport system (the 2nd busiest in the US) is expected to be closed throughout the weekend. You can see how the storm develops and impacts on the US here.

The record snowfall for Washington is 28in (71cm) that fell during a two-day period in January 1922.

Further north, Boston, which was significantly affected by numerous snowstorms last year, is unlikely to see major snow during this event, with only 5 to 10cm predicted.

Could this weather affect us here in the UK?

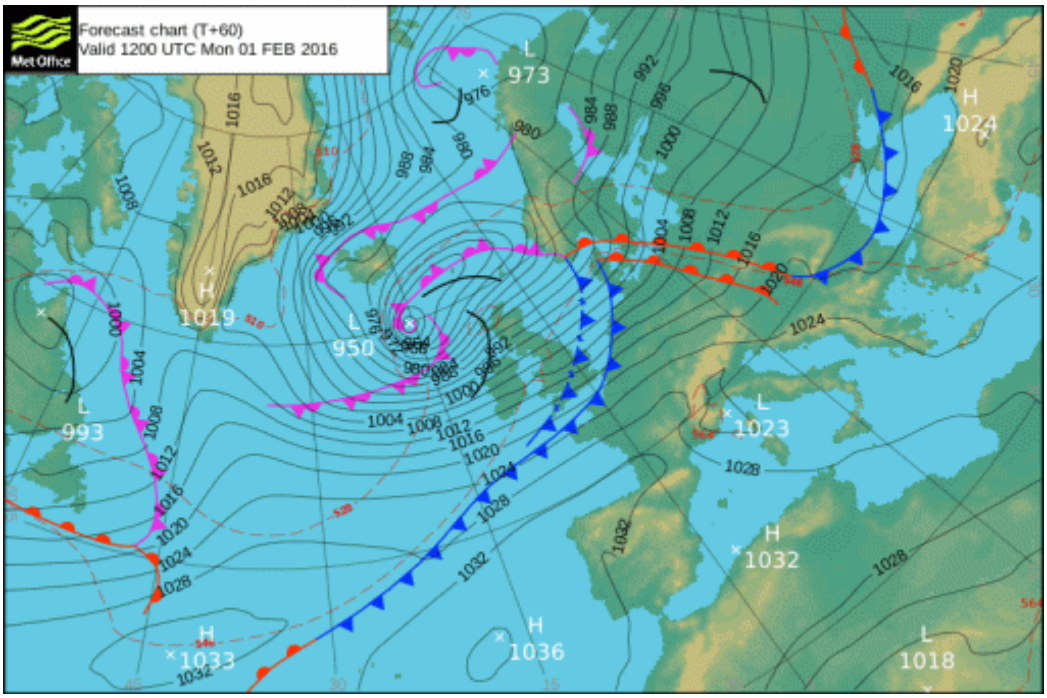
It is sometimes said that ‘the weather in the US reaches the UK 7 days later’. Although there is the potential that, as the storm tracks across the Atlantic towards our shores, it will bring a spell of strong winds and heavy rain next week, we are not expecting any snow as temperatures will remain close to, or above the seasonal average.

Date Created
January 2016

Storm Henry forecast to bring severe gales in places on Monday

Description

A rapidly deepening area of low pressure pushing quickly across the Atlantic and expected to run close to the north of Scotland through Monday and into Tuesday has been named as Storm Henry. Keep up to date with the latest for your area using our forecast pages.



Forecast chart for Monday 1 February 2016

The Met Office issued an Amber National Severe Weather Warning for Storm Henry on Saturday morning. The Amber warning is valid from 3pm on Monday afternoon until 3am on Tuesday morning. Storm Henry closely follows Storm Gertrude, which tracked away from Shetland on Friday night.

The weather is expected to remain unsettled over the coming days with the prospect of further deep Atlantic depressions bringing spells of wind, rain and snow at times. You can stay up to date with the latest forecast for your area using our UK forecast pages and Severe weather warnings. You can also view our latest forecast Videos

During Saturday it will remain very windy in the north of the UK with severe gales across Scotland. These strong winds will be combined with frequent sleet or snow showers, leading to some drifting and blizzard conditions, especially over high ground, but even at low levels for a time. Severe weather warnings for wind and snow have been issued for Scotland, Northern Ireland, Wales and northern England to the Midlands.

For **Saturday night** snow showers will remain in the north and west and there will be some icy patches.

During **Sunday** milder, cloudier and wetter conditions will spread slowly northeastwards across the UK, but only slowly with northern, eastern and some central regions staying cold for much of the day and these wetter conditions preceded by some transient snow over higher ground in northern, western and central Britain..

On **Monday** the vigorous low pressure system – named as Storm Henry –will be approaching the UK from the Atlantic. Currently, this system is expected to pass just to the north of Scotland, bringing very strong west or southwesterly winds across much of the UK. Gales or severe gales with heavy rain are expected across northwestern parts. These winds could bring disruption to transport as well as power supplies.

Dan Suri, Chief Operational Meteorologist said: “With several periods of severe weather forecast to affect the UK over the coming days, it’s a good idea to keep a close eye on the forecast and the National Severe Weather Warnings as the details of what areas are to be affected and when, are likely to change. Our forecast pages, Facebook and Twitter sites and our Weather App can all help you keep up to date with the weather so that you can plan ahead and be prepared.”

Date Created
January 2016